PRACTICAL MEDICAL PARASITOLOGY

إعداد:

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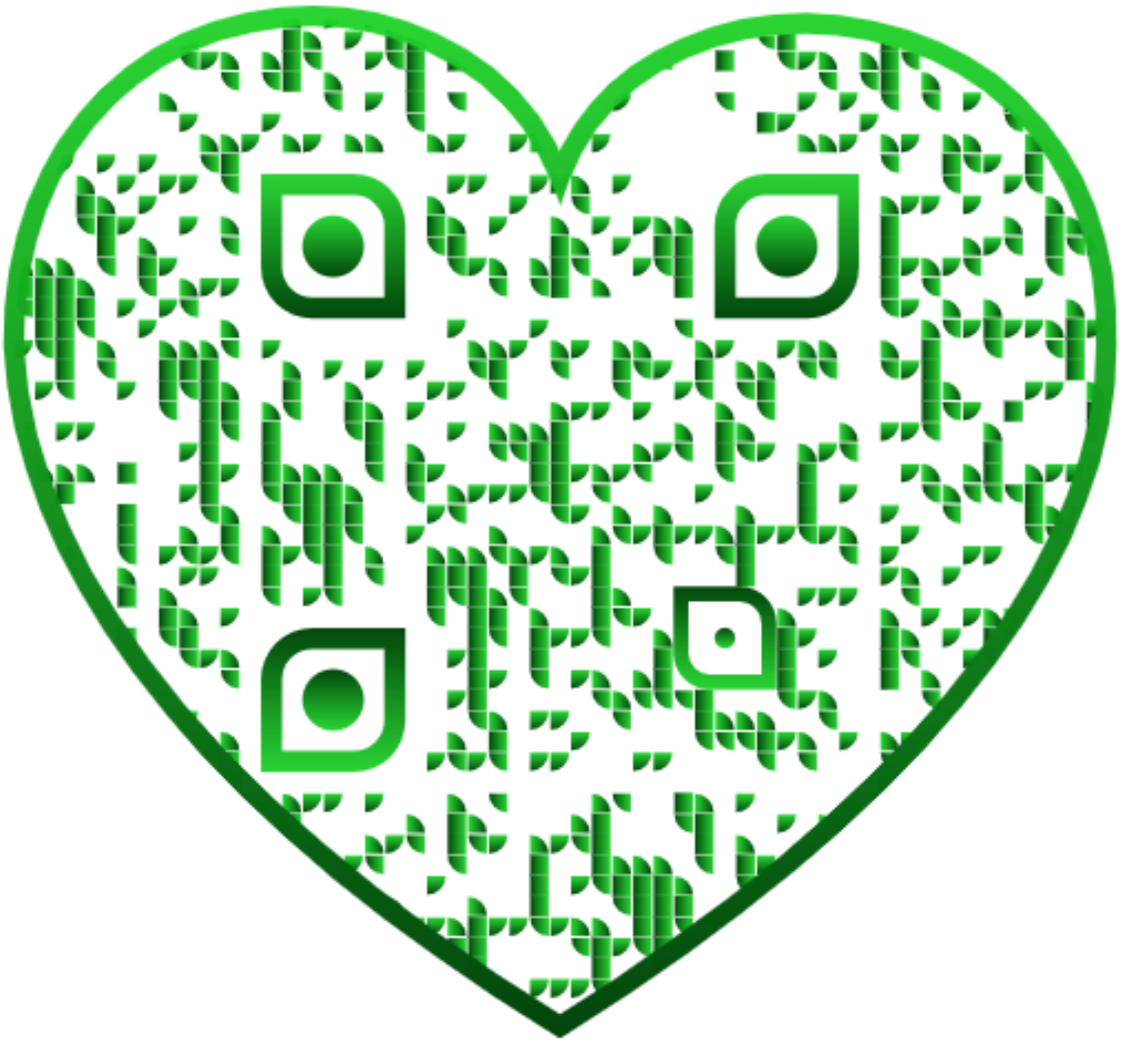
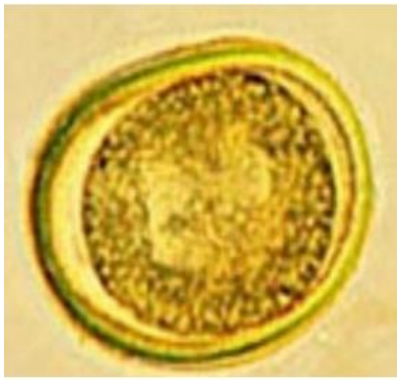


Ascaris lumbericoides (Giant intestinal worm)

INTRODUCTION :

- Phylum: Nemathelminthes
- Class: Nematoda
- Disease: Ascariasis, ascaris infection
- G.D: Cosmopolitan, common in children
- D.H: Man only
- Habitat: lumen of small intestine
- Infective stage: mature egg
- Diagnostic stage: Egg in stool & adult worm in heavy infection.
- Mode of infection: through ingestion of mature egg in contaminated vegetables or water



Decorticated egg of Ascaris lumbericoides

UnFertilized egg of Ascaris lumbericoides

Morphology :

A-Adult:

cylindrical in shape

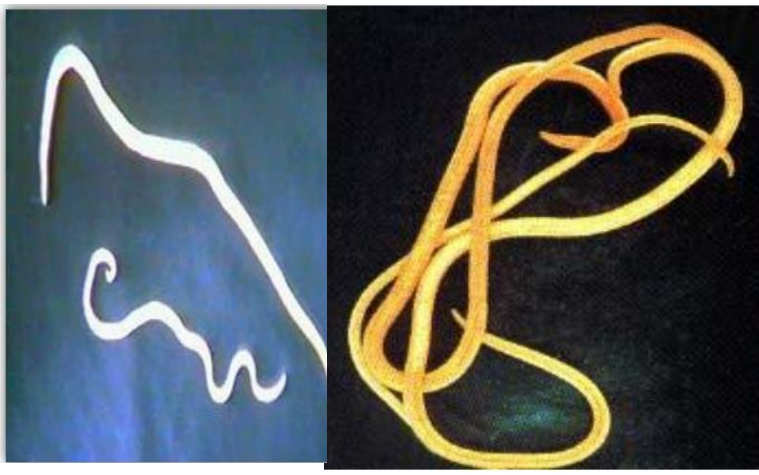
creamy-white or pinkish in color

*Male:

- About 20 cm in length
- Posterior end is curved with two retractile spicules

*Female:

- About 25 cm in length
- Posterior end is straight

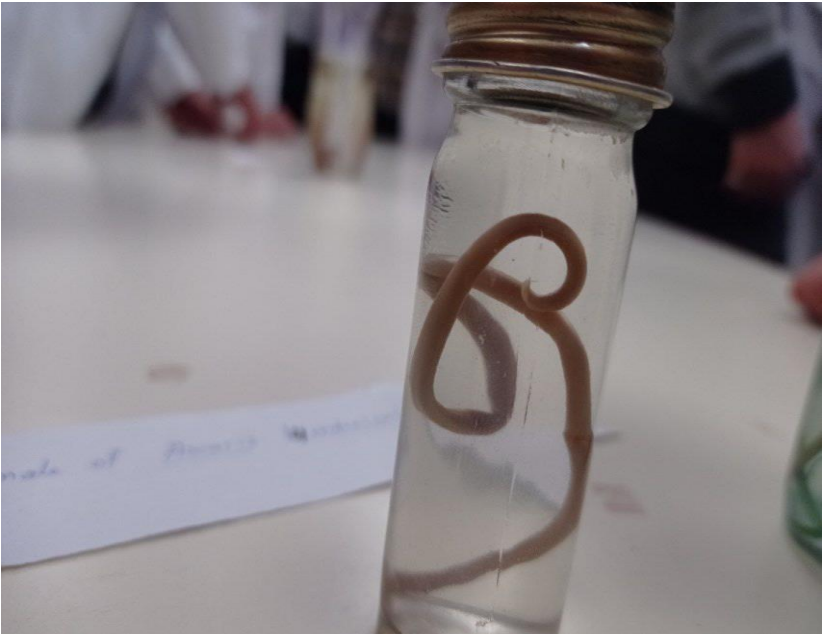


Adult worm of Ascaris lumbericoides

B- Eggs:

	Fertilized egg	Unfertilized egg	Decorticated egg
Size Shape Content color	60x45 Rounded to oval, thick layer covered by mammillated coat Immature ovum Yellowish brown	90x45 Longer and narrow with ill developed mammillation Refractile granules Yellowish brown	fertilized egg but without mammillation

Fertilized egg of Ascaris lumbericoides



Adult male of Ascaris lumbericoides

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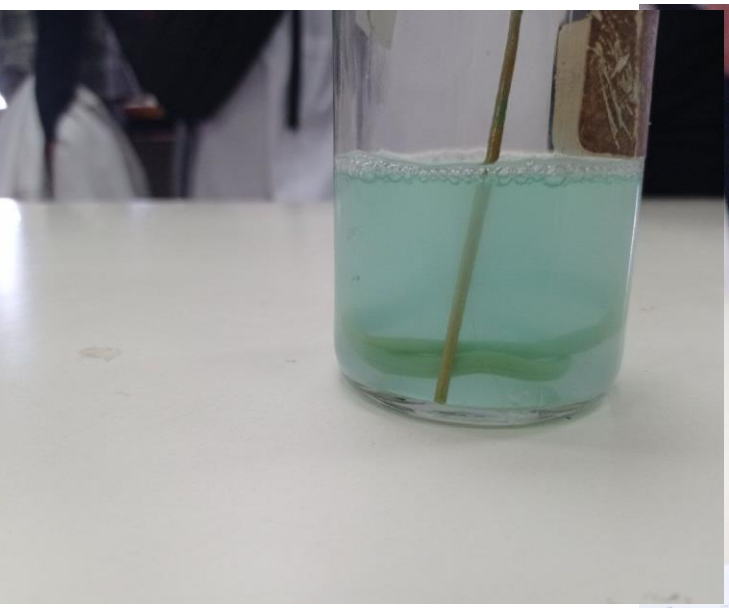
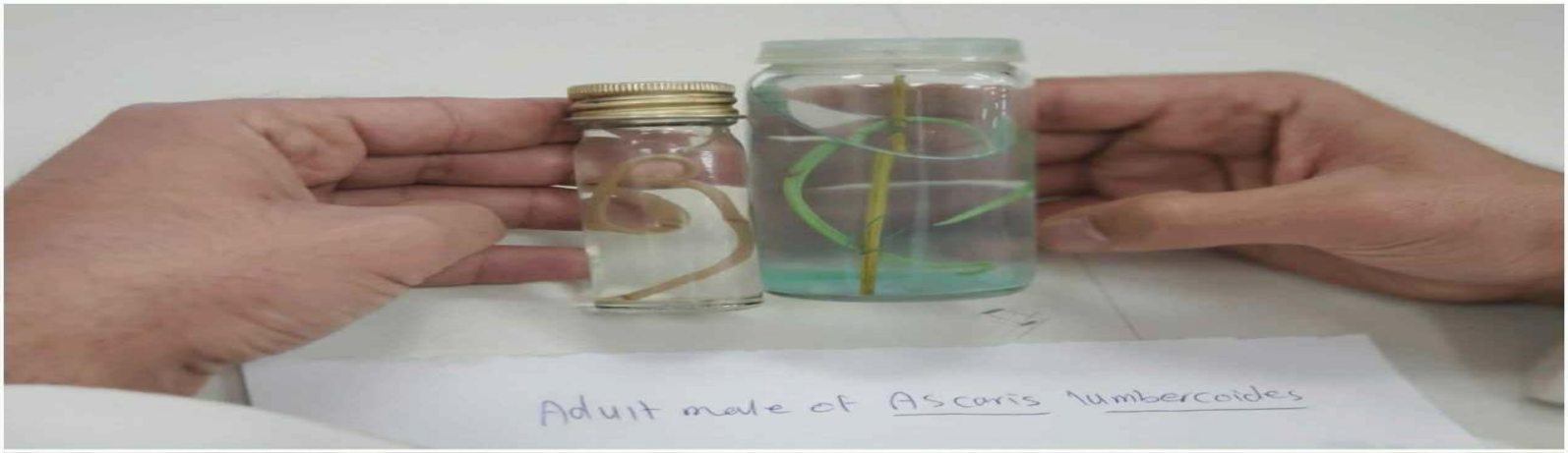
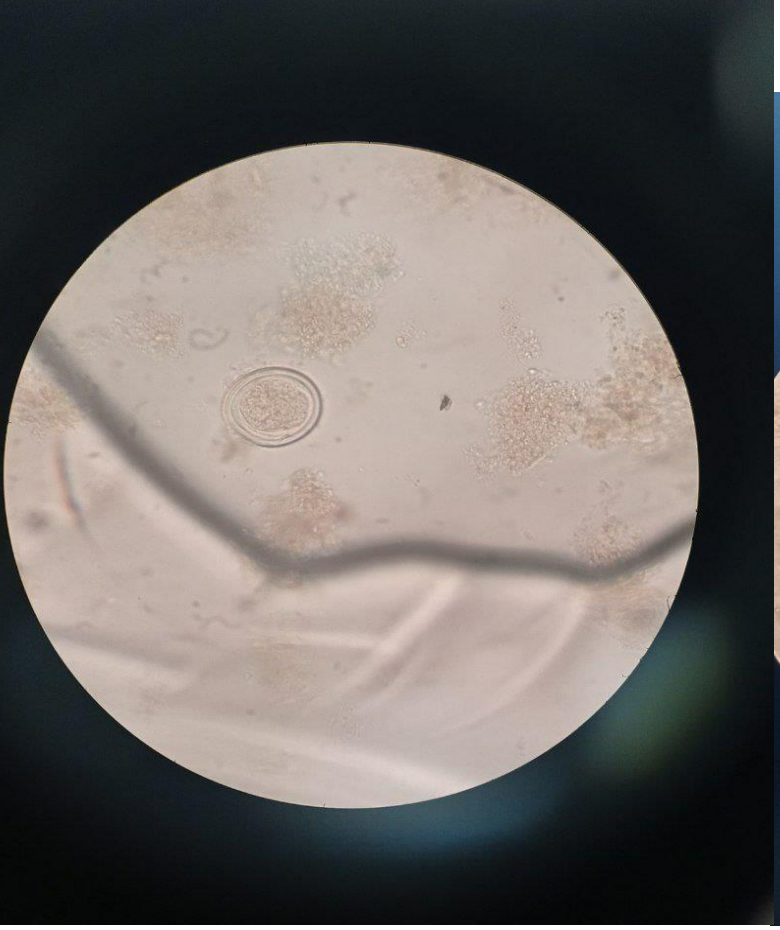
Adult male of Ascaris lumbericoides



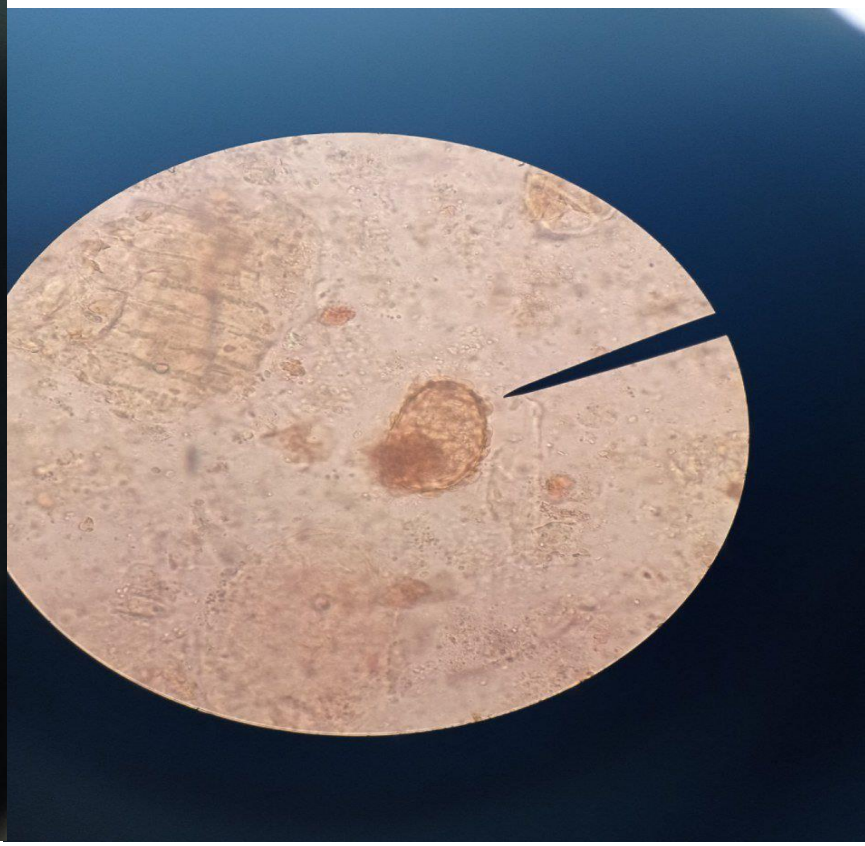
Adult female of Ascaris lumbericoides

Adult worms of Ascaris lumbericoides



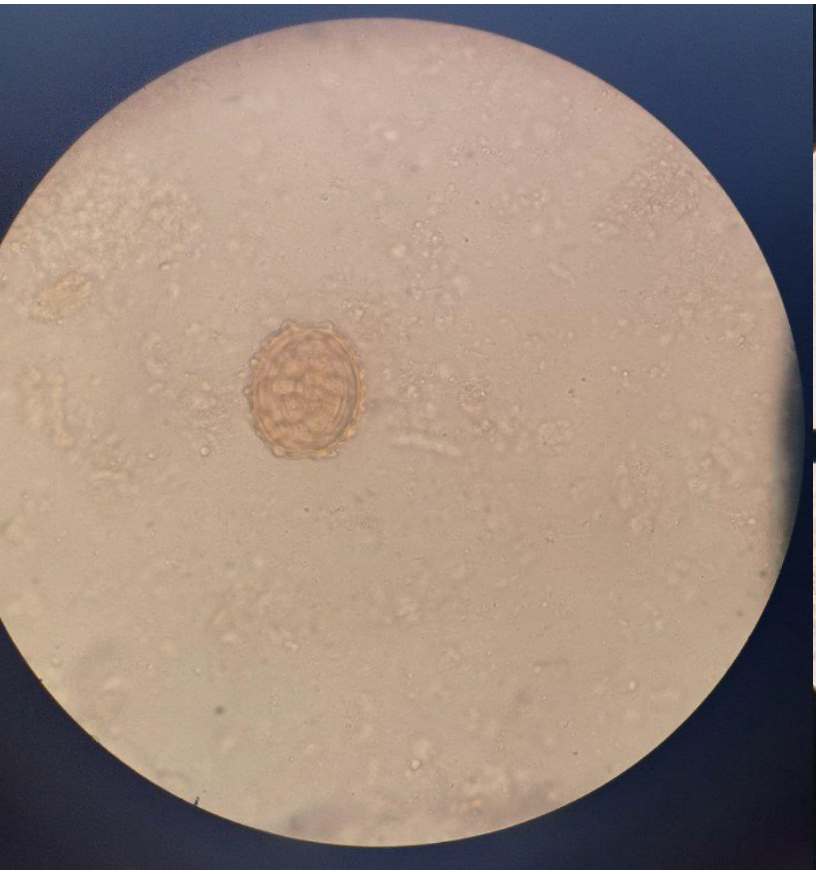


Fertilized egg of Ascaris lumbericoides
(Decorticated)



UnFertilized egg of Ascaris lumbericoides
(Corticated)

الدكتورة قالت ما فيش سلايدات في المعمل decorticated بالنسبة للـ UnFertilized



Fertilized egg of Ascaris lumbericoides
(Corticated)

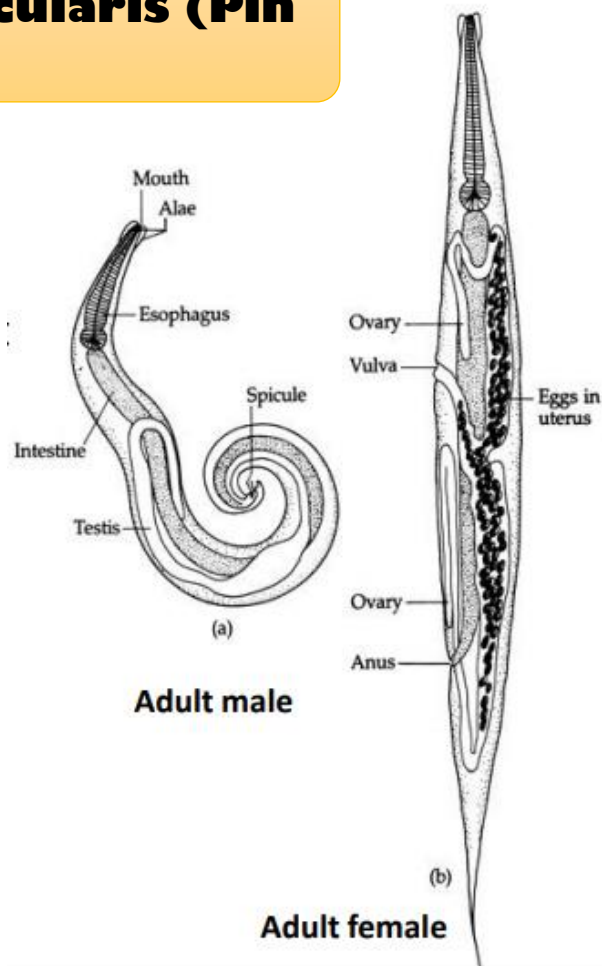
Fertilized egg of Ascaris lumbericoides
(Corticated)

Enterobius vermicularis (Pin worm)

INTRODUCTION :

- Phylum: Nemathelminthes
- Class: Nematoda
- Disease: Oxyuriasis,Enterobiasis
- G.D: Cosmopolitan, common in children
- D.H: Man only
- Habitat: Large intestine (Caecum)
- Infective stage: egg
- Diagnostic stage: Egg & adult worm in stool.
- Mode of infection:

Autoinfection(hand to mouth transmission).
2- Inhalation of air borne eggs in dust.
3- Retroinfection.
4-Ingestion of egg in contaminated food or water



Morphology :

A- Adult:

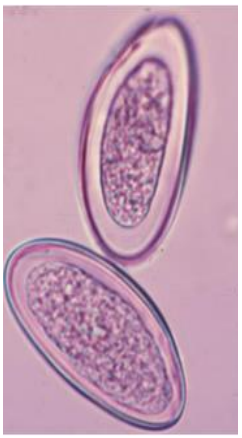
Small , spindle – shaped worm
2 Cuticular wing like expansions at The anterior end.
Oesophagus (double bulbed)

* Male:
  - About 5 mm in length • Posterior end is curved.

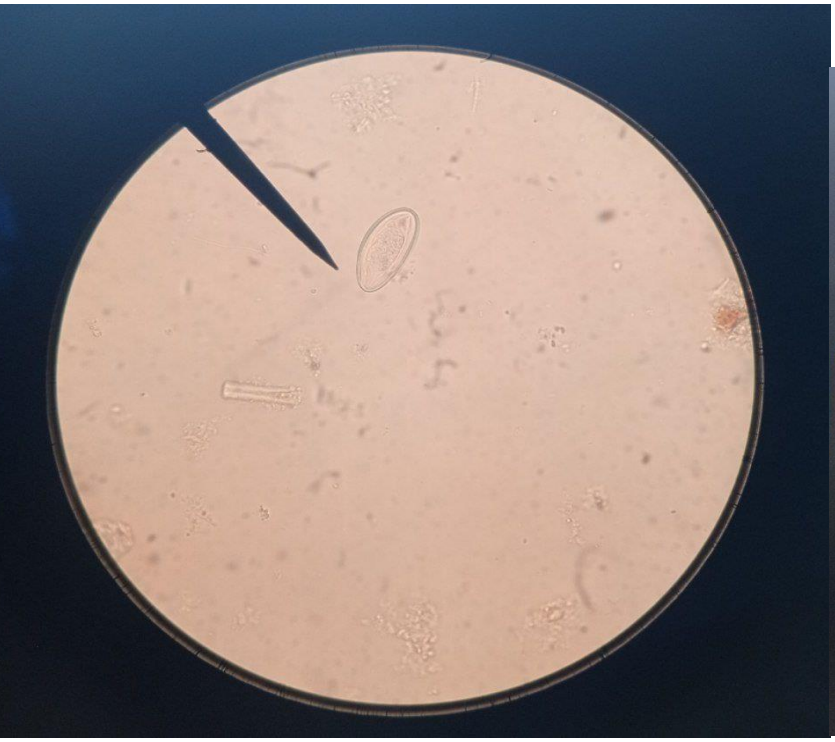
* Female:
- About 10 mm in length
- Posterior end is straight with long pointed tail.

B- Egg:

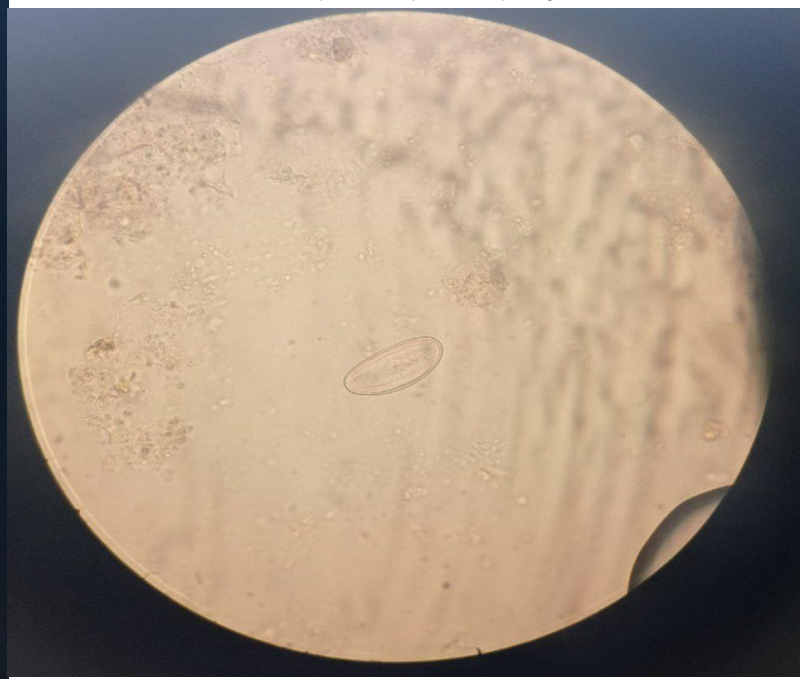
- Size : 50x20 M
- Shape :D-shaped egg with double layer shell.
- Content : larva (mature)
- Color : translucent



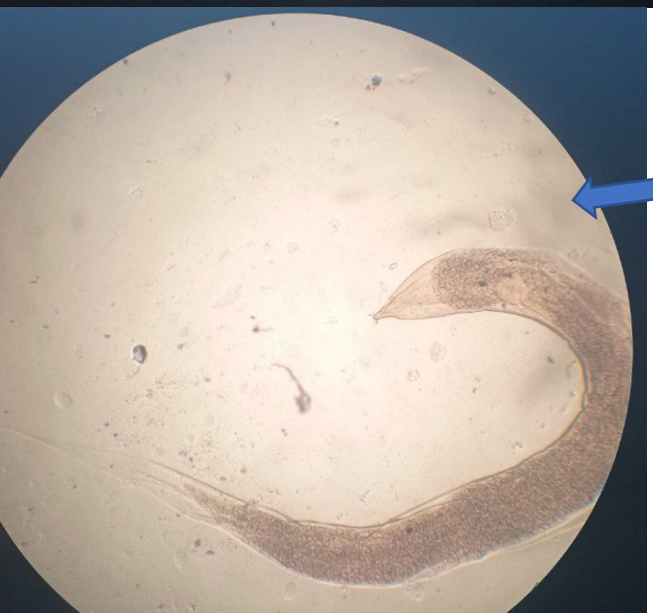
Adult male



Egg of Enterobius vermicularis
(D-shaped)



Egg of Enterobius vermicularis
(D-shaped)



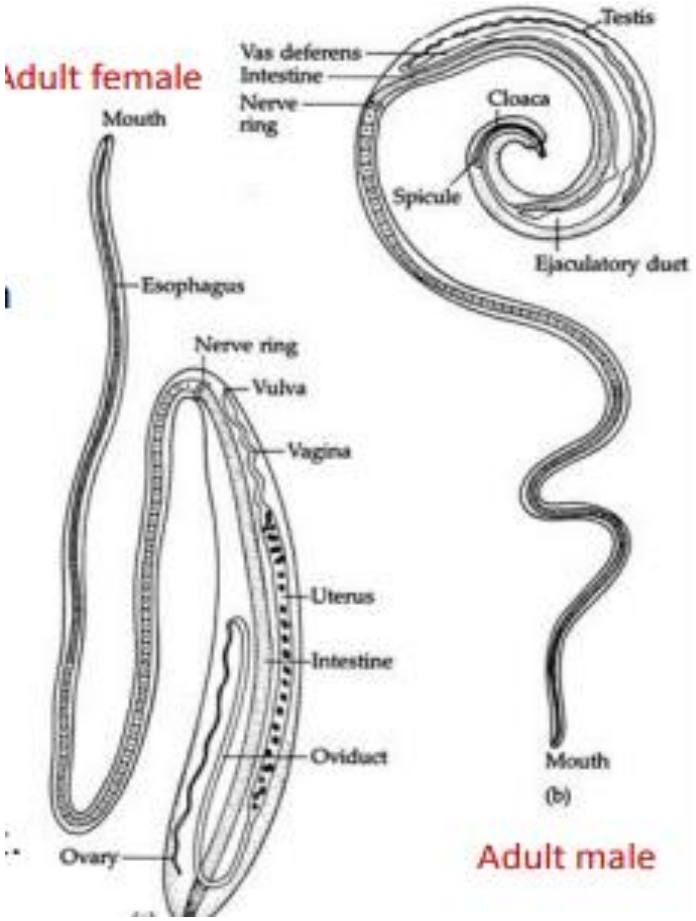
Adult female of Enterobius vermicularis

(لا يوجد في المعمل male)

Trichuris trichiura (whip worm)

INTRODUCTION :

- Phylum: Nemathelminthes
- Class: Nematoda
- Disease: Trichuriasis
- G.D: Cosmopolitan
- D.H: Man only
- Habitat: Large intestine (Caecum)
- Infective stage: mature egg
- Diagnostic stage: Egg
- Mode of infection: through ingestion mature egg in contaminated food or water



Morphology :

A- Adult:

Body cosist of a thin anterior fifth and a thick posterior two fifth. with cellular oesophagus.

Male:

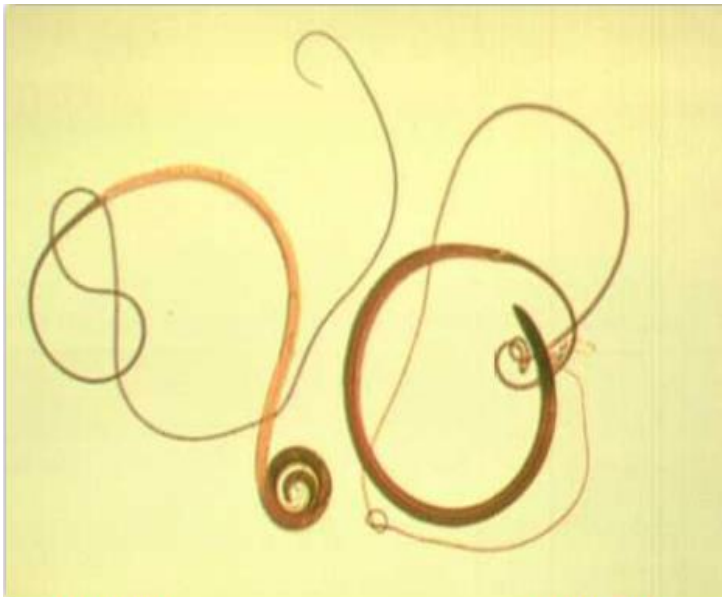
- About 3 cm in length
- Posterior end is curved.

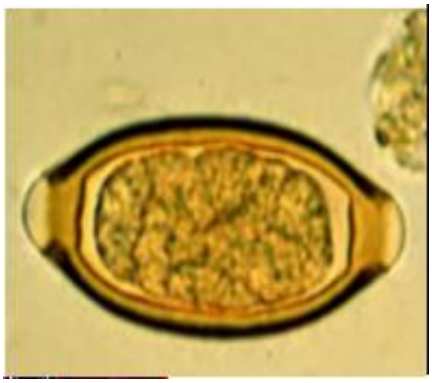
Female:

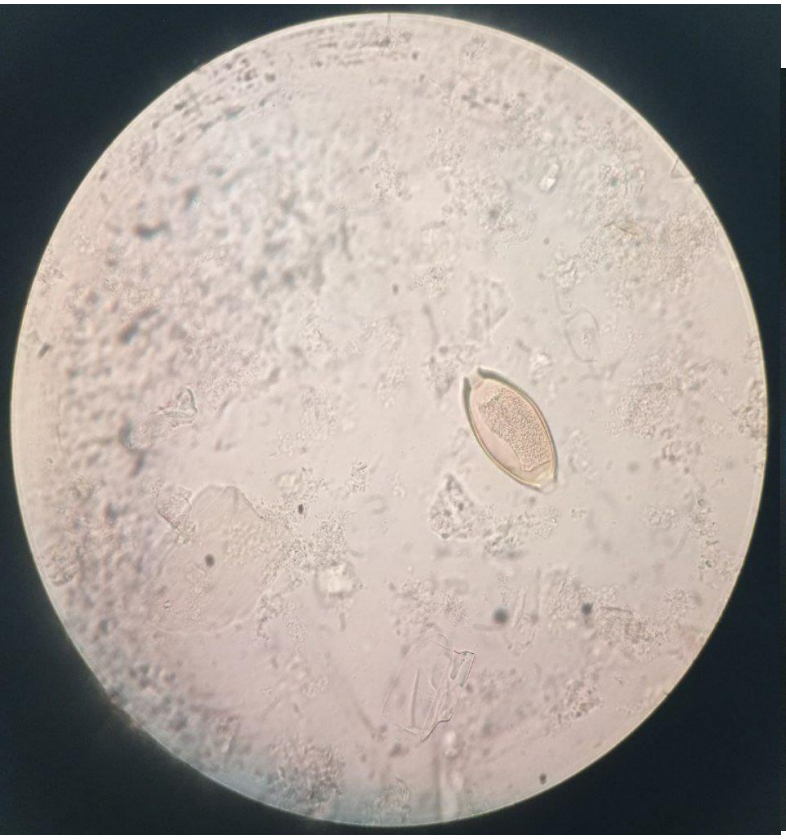
- About 4 cm in length
- Posterior end is straight and blunt.

B- Egg:

- Size : 50x25 M
- Shape :Barrel-shaped, thick shelled with 2 mucoid polar plugs
- Content : immature ovum.
- Color : brownish .







Egg of Trichuris trichiura
(Barrel-shaped)

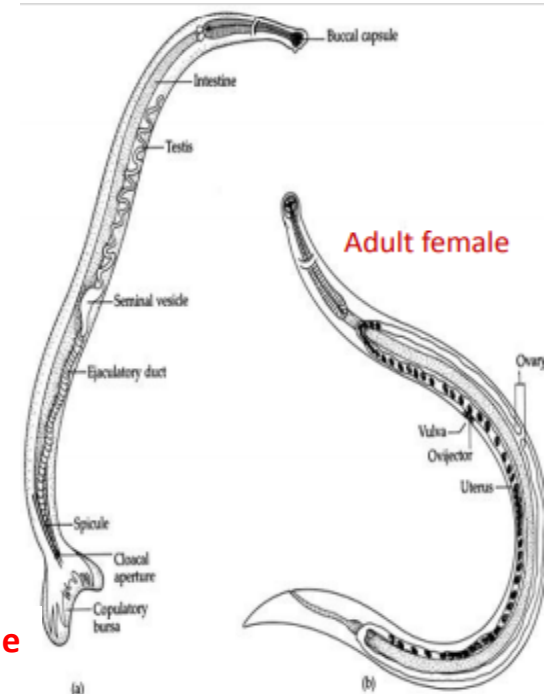
Adult male of Trichuris trichiura
(Curved posterior end)

Adult female of Trichuris trichiura
(Straight posterior end)

Ancylostoma duodenale (Hook worm)

INTRODUCTION :

- Phylum: Nemathelminthes
- Class: Nematoda
- Disease: Ancylostomiasis
- G.D: Tropical &subtropical countries
- D.H: Man only
- Habitat: Small intestine
- Infective stage: Filariform larva
- Diagnostic stage: Egg
- Mode of infection: by penetration filariform larva human skin when he walks barefooted on soil containing the larva.



Adult male

Morphology :

A-Adult:

♣ Small , cylindrical ,grayish ,white or pink in color.
♣ Has buccal capsule with 2 pairs of teeth on anterior border , 2 lancet in its bottom ,and 2 plate on dorsal border
♣ Club – shaped oesophagus.
♣ The anterior end of the worm is slightly bent dorsally.

*Male:

- About 1cm in length
- Has copulatory bursa with two spicules

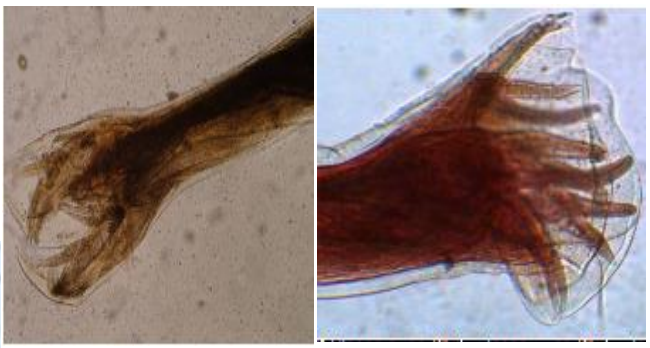
*Female:

- About 1.2 cm in length
- Pointed end

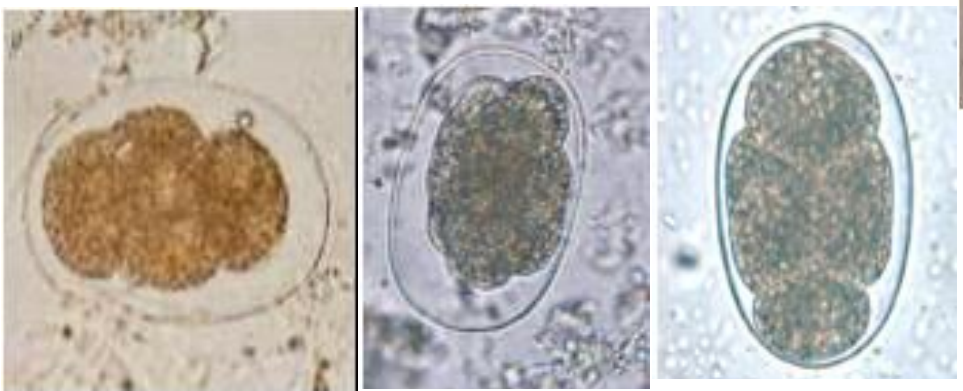
buccal capsule of Ancylostoma duodenalae

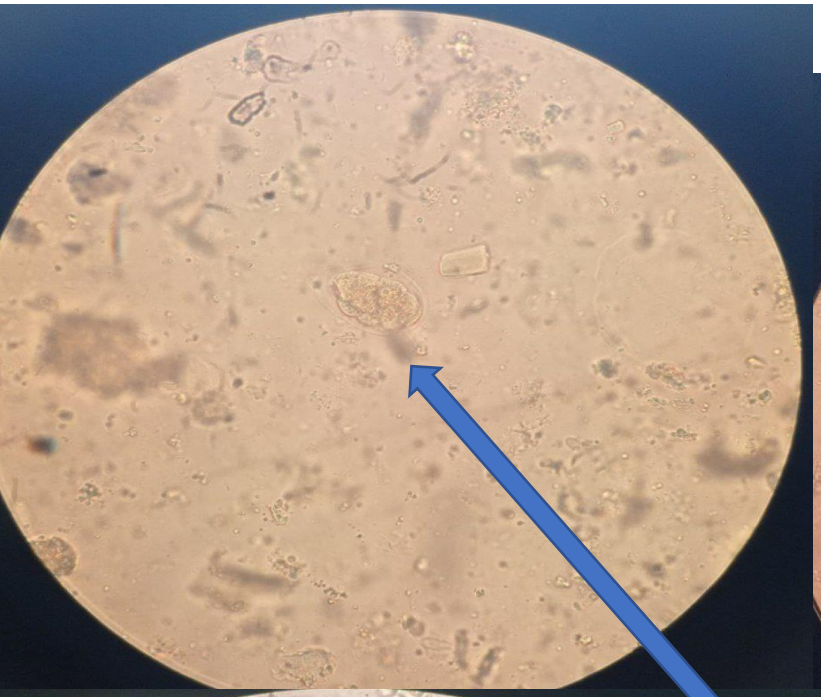
B-Egg:

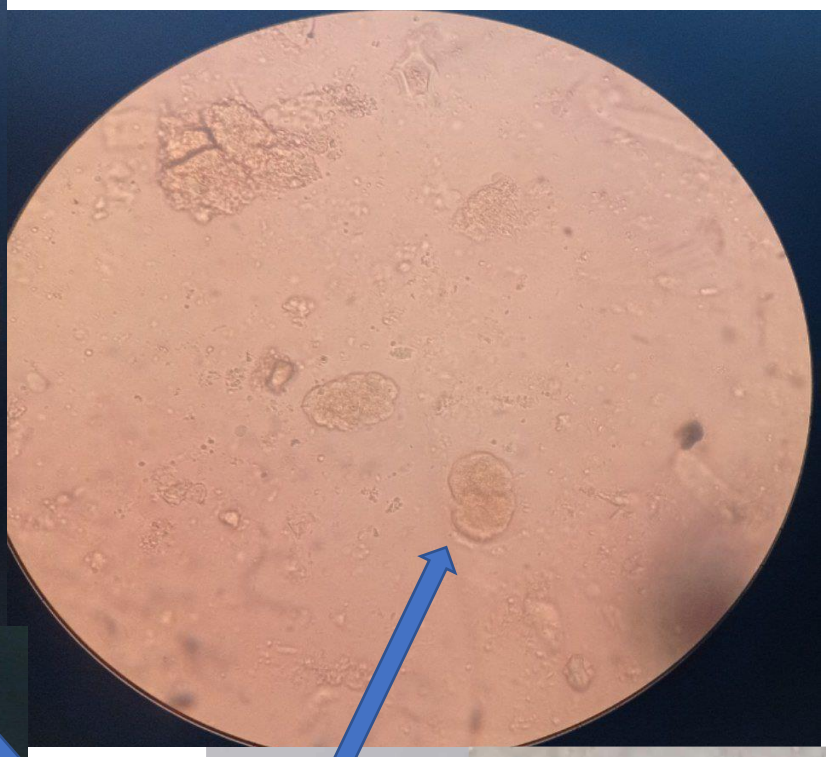
♣ Size:60x40 M
♣ Shape: Oval and thin shell
♣ Content: Immature ovum with 4-cell stage

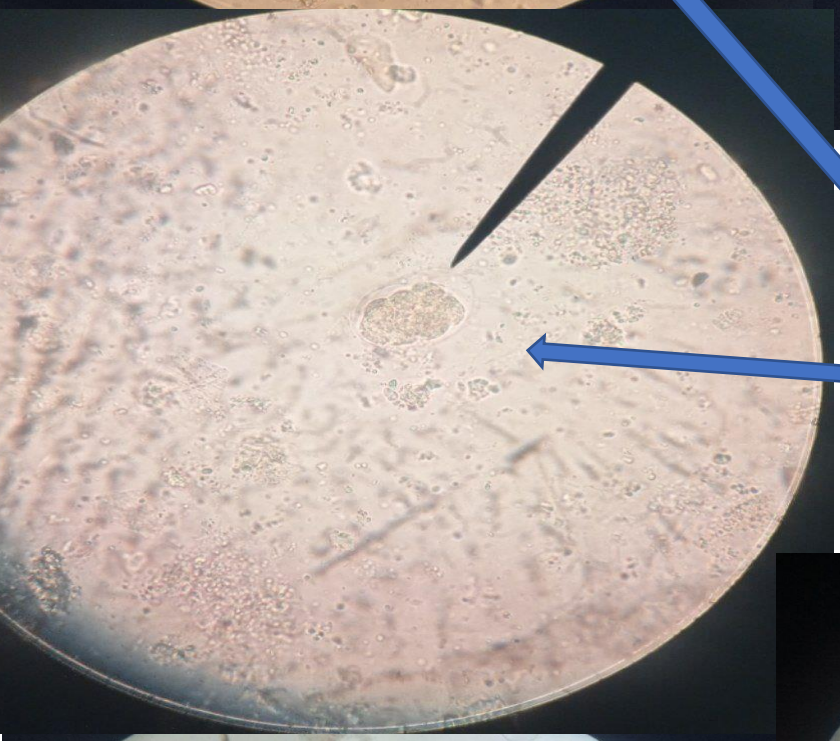


Copulatory bursa of adult male of Ancylostoma duodenalae

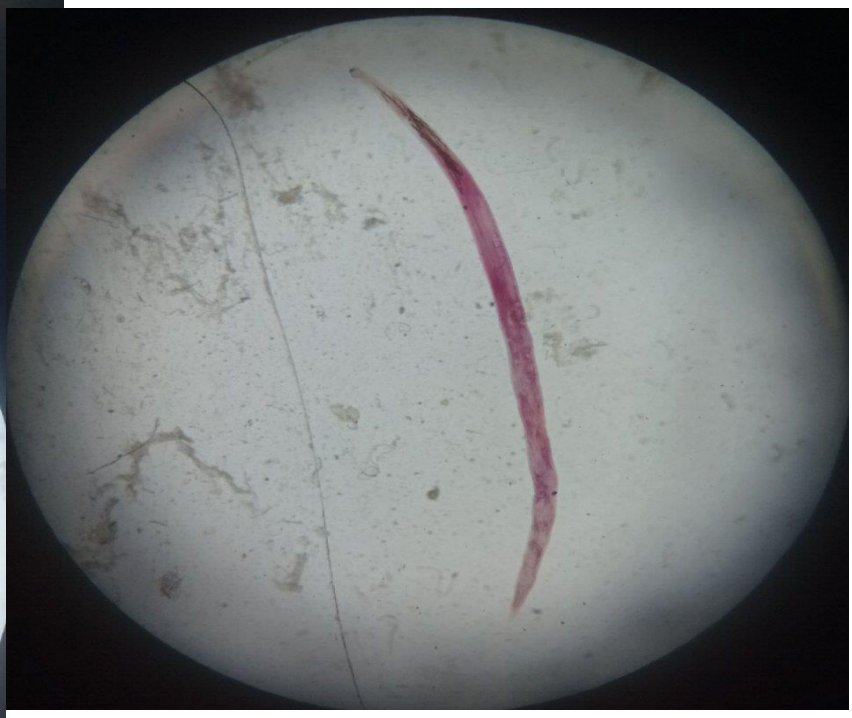








Egg of Ancylostoma duodenale



Adult female of Ancylostoma duodenale

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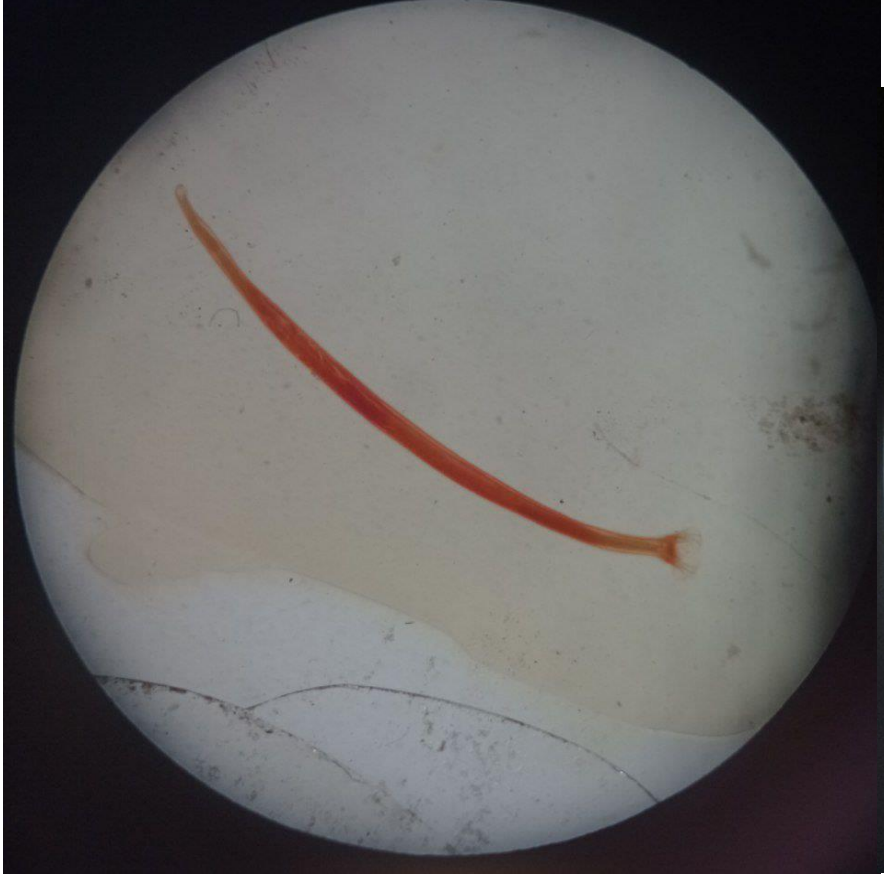
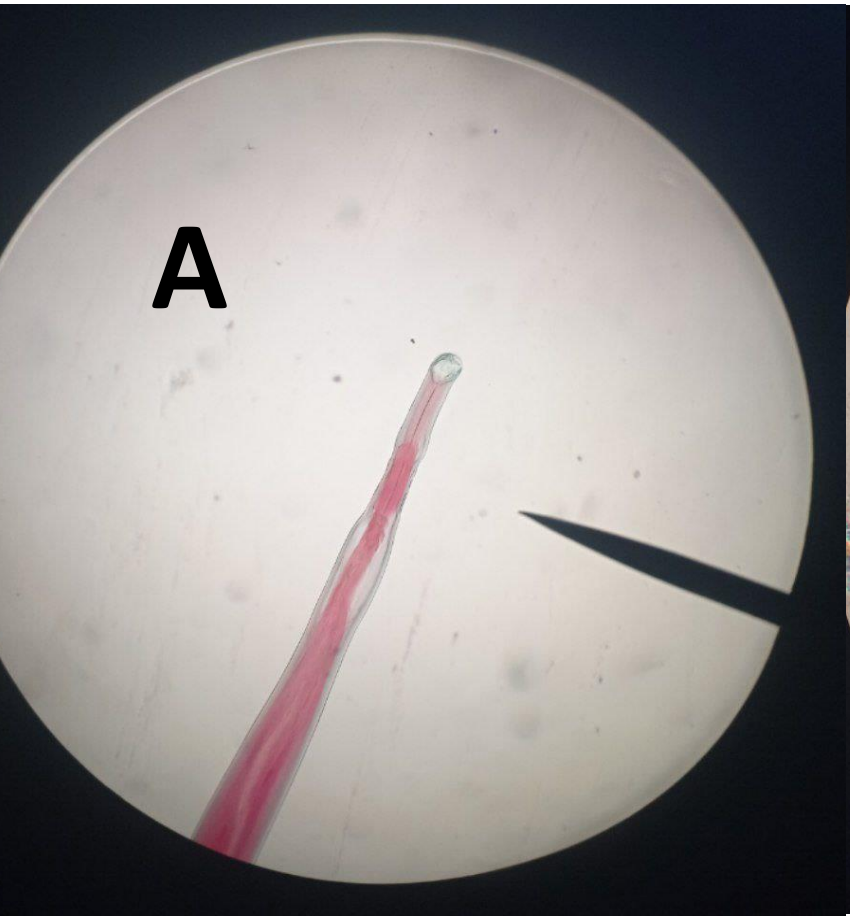
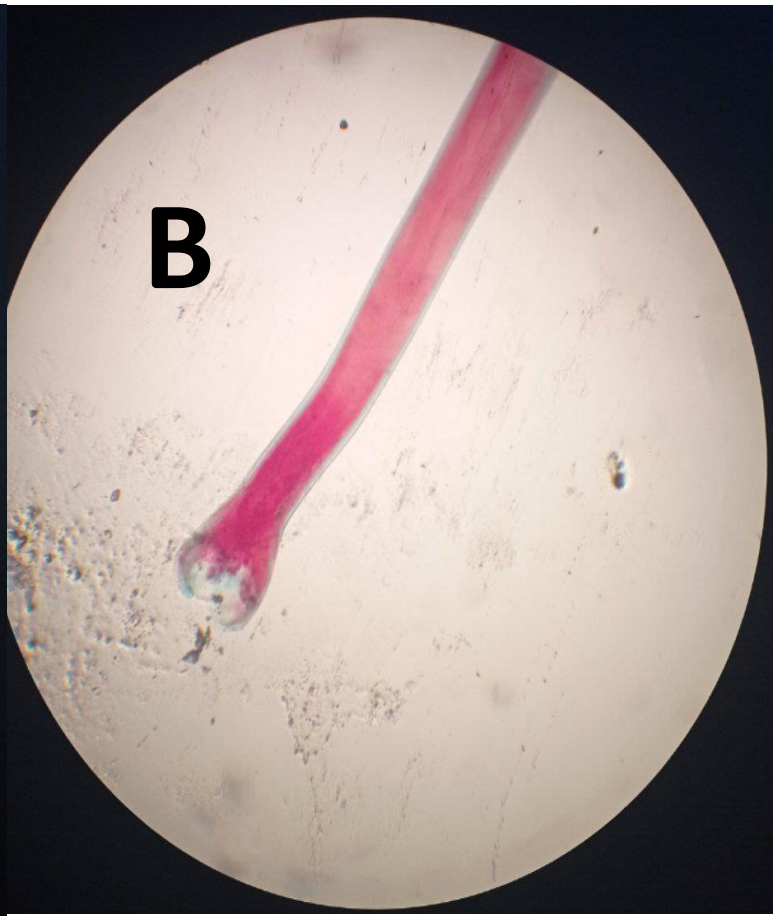


Adult male of Ancylostoma duodenale





A: Anterior end (buccal capsule)of Ancylostoma duodenale

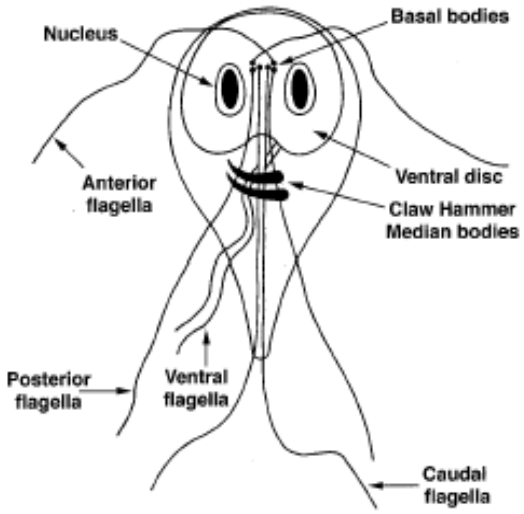
B: Posterior end (copulatory bursa) of Ancylostoma duodenale

GIARDIA LAMBLIA
(Intestinal flagellate)

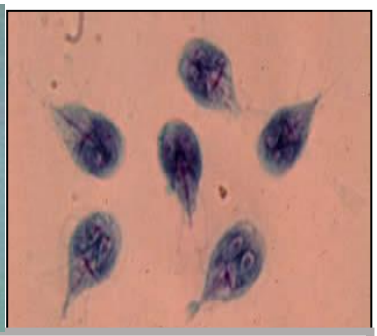
INTRODUCTION :

Notes : Move by flagellates
Reproduce by binary fission

Class : Zoomastigophora
Disease : Giardiasis
G.D. : World wide
Habitat: small intestine especially the duodenum
Infective stage: cyst
Diagnostic stage: cyst & trophozoite
Mode of infection:
By ingestion the cyst in water and vegetables contaminated with cyst
Autoinfection
Direct contact with patient



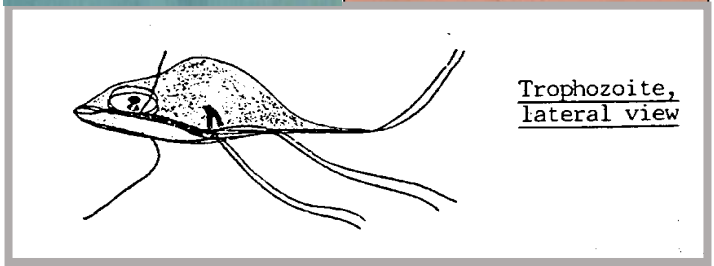
Morphology :



a)- Trophozoite:

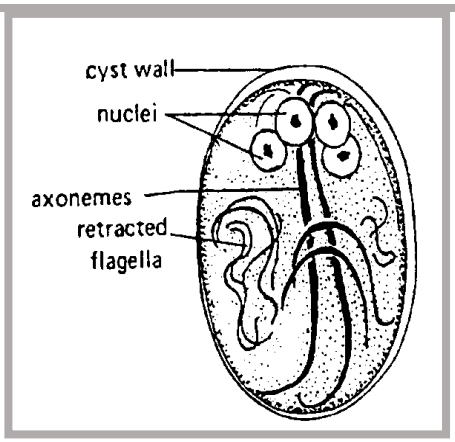
- **Pear-shape, broad rounded anteriorly and tapering posteriorly. The dorsal surface is convex.**
- **Size:15Mm**

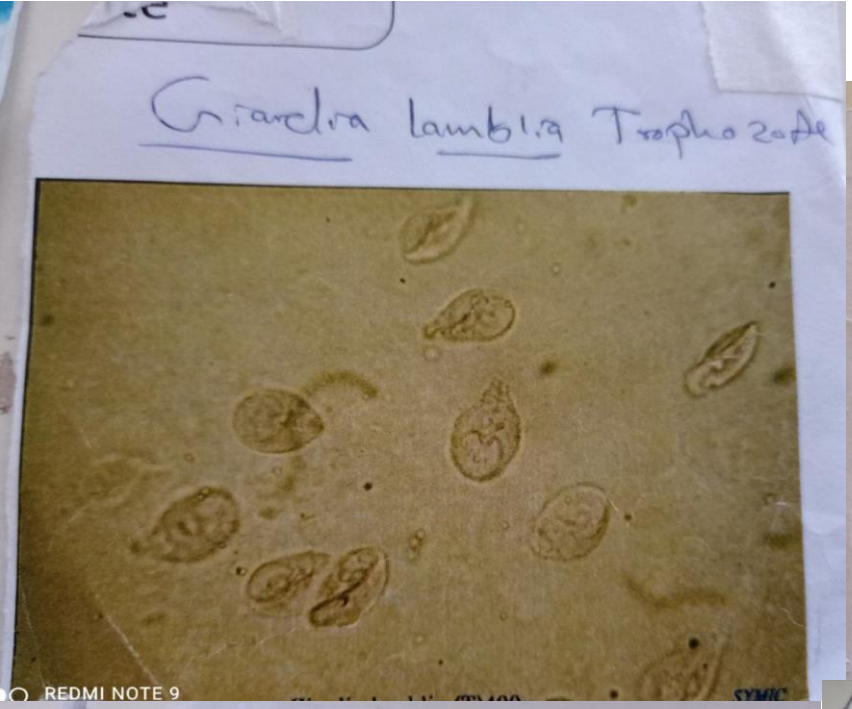
There are ventral bilobed sucking disc, 2 nuclei with central karyosome,2 axostyles, and parabasal body With 4 pairs of flagella.

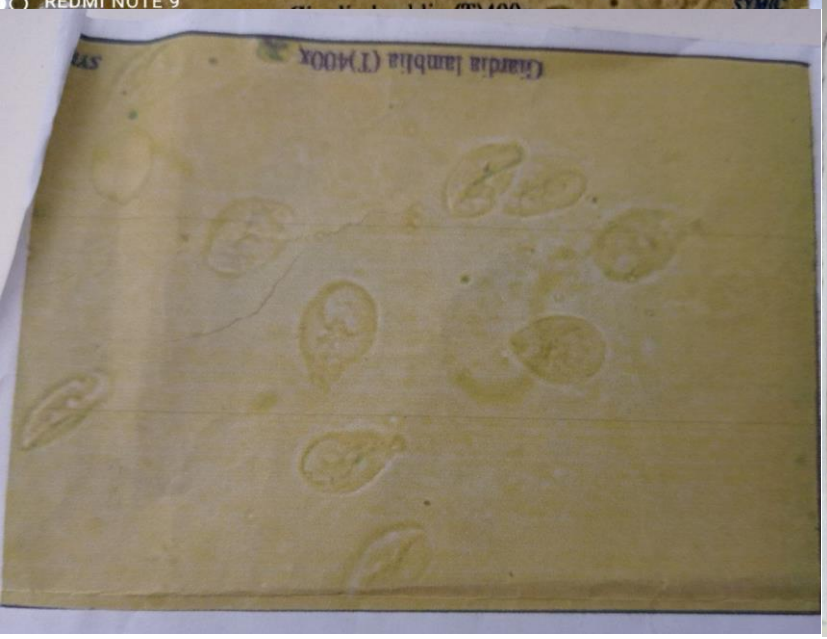


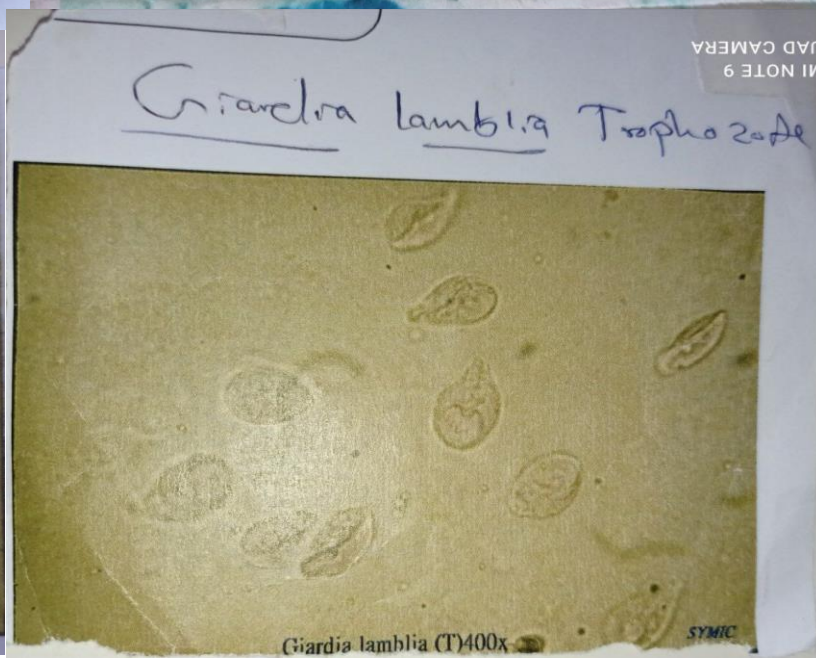
B)- cyst:

- **Oval in shape with thick wall.**
- **Size: 12Mm**
- **Has 4 rounded nuclei grouped at one pole.**
- **There are axostyle.**









Trophozoite stage of Giardia Lamblia

Cyst stage of Giardia Lamblia

AMOEBAE

Entamoeba histolytica

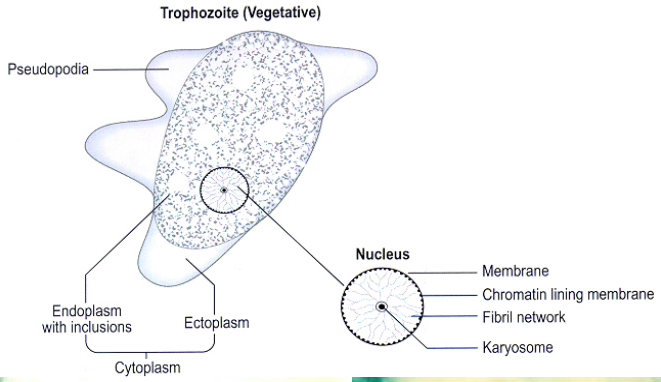
INTRODUCTION :

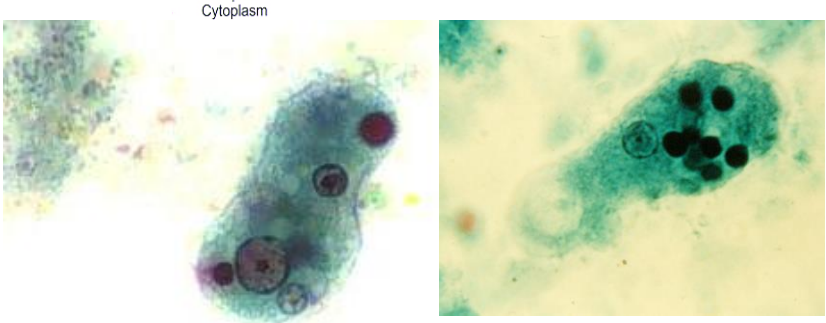
Note: Move by pseudopodia
Reproduce by binary fission

- Phylum: Sarcomastigophora
- Class: Rhizopoda
- Disease : Amoebiasis, amoebic dysentery
- G.D. :World wide
- Habitat: the wall and lumen of the colon especially the caecum.
- Infective stage: mature cyst(with 4 nuclei)
- Diagnostic stage: cyst & trophozoite
- Mode of infection:

By ingestion the mature cyst in water and vegetables contaminated with cyst

- Autoinfection
- Direct contact with patient





Trophozoite of Entamoeba histolytica

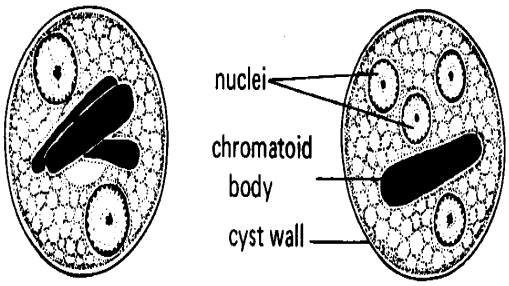
Morphology :

a)- Trophozoite:

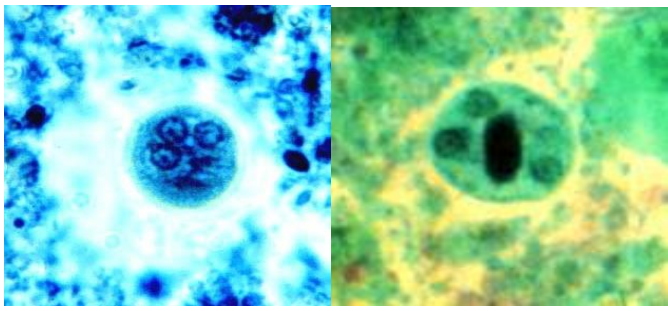
- It is the motile form (gliding motility)
- Amoeboid in appearance
- Size: 25 Mm
- Well-defined ectoplasm (clear, and form extensions called pseudopodia)
- Endoplasm: contain nucleus, food vacuoles & red blood cells
- Nucleus: it has thin nuclear membrane lined internally with fine peripheral chromatin granules, the karyosome is central

B- cyst:

- Round in shape
- Size:15Mm
- Immature cyst contain a glycogen vacuoles and chromaotid bodies(bar / cigar /rod shaped), which disappear in mature cyst
- Immature cyst contain 1-2 nuclei
- mature cyst contain 4 nuclei (quadrinucleate)



B. Binucleate C. Quadrinucleate

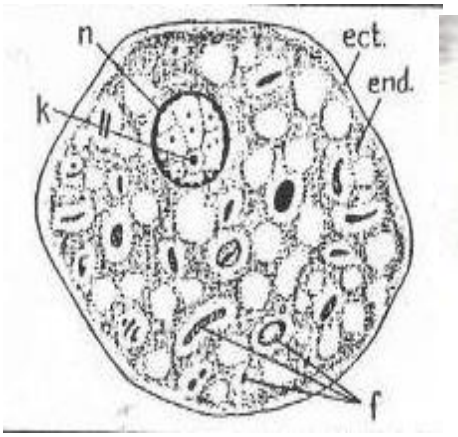


cyst of Entamoeba histolytica

AMOEBAE

Entamoeba coli

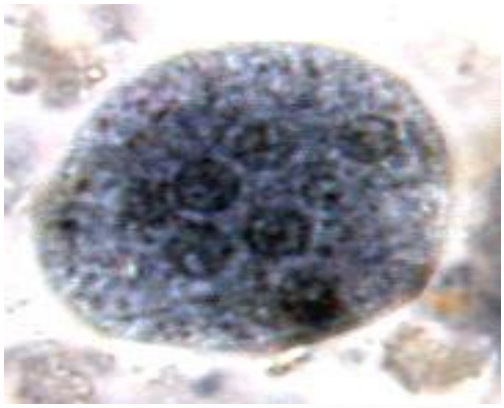
Morphology :



Trophozoite of Entamoeba coli

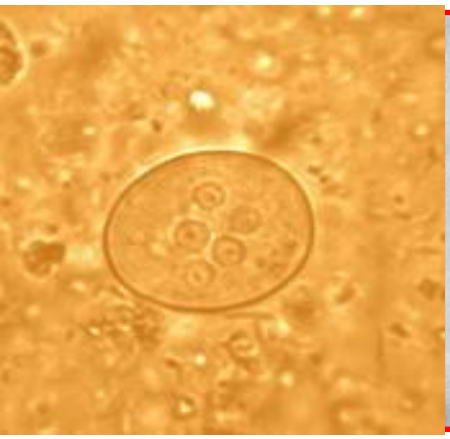
A - Trophozoite:

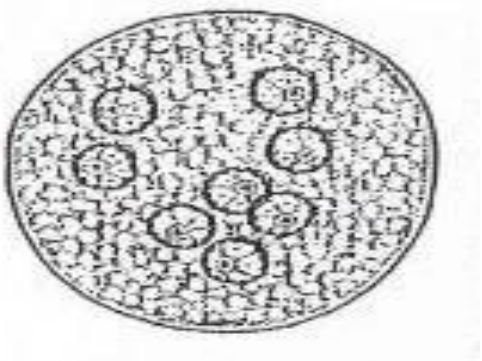
- round in shape
- Sluggish movement
- Size:30 m
- ill-defined ectoplasm
- Endoplasm contain multiple food vacuoles and bacteria, there is no RBC
- Nucleus :with coarse peripheral chromatin and eccentric karyosome



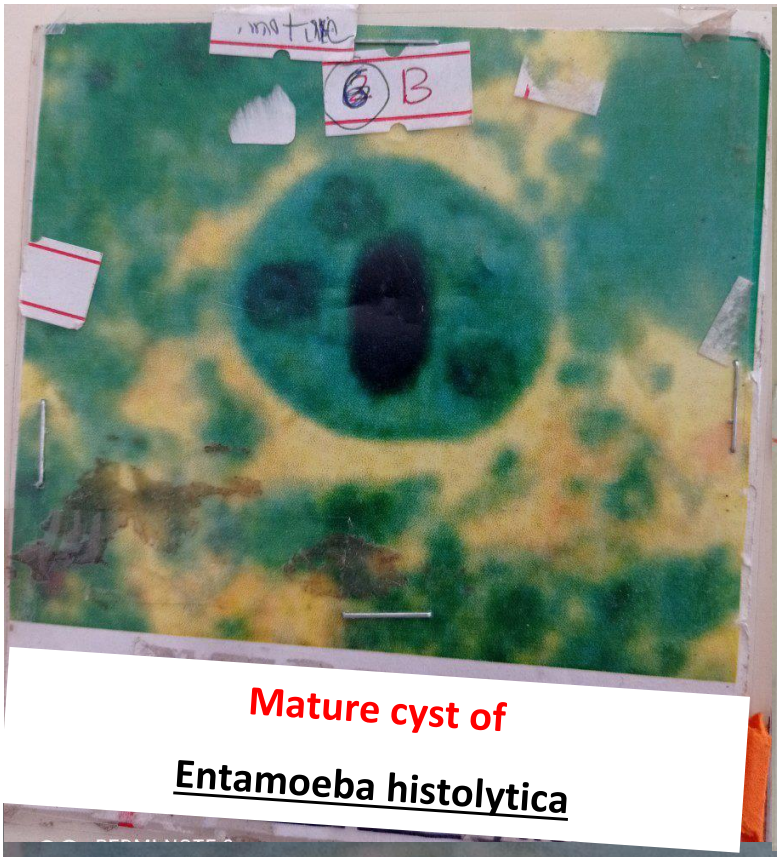
B - Cyst:

- spherical in shape
- Size: 20M
- immature cyst contain a glycogen and a slender splinter shaped chromatoid bodied
- Immature cyst contain 2-4 nuclei
- Mature cyst contain 8 nuclei



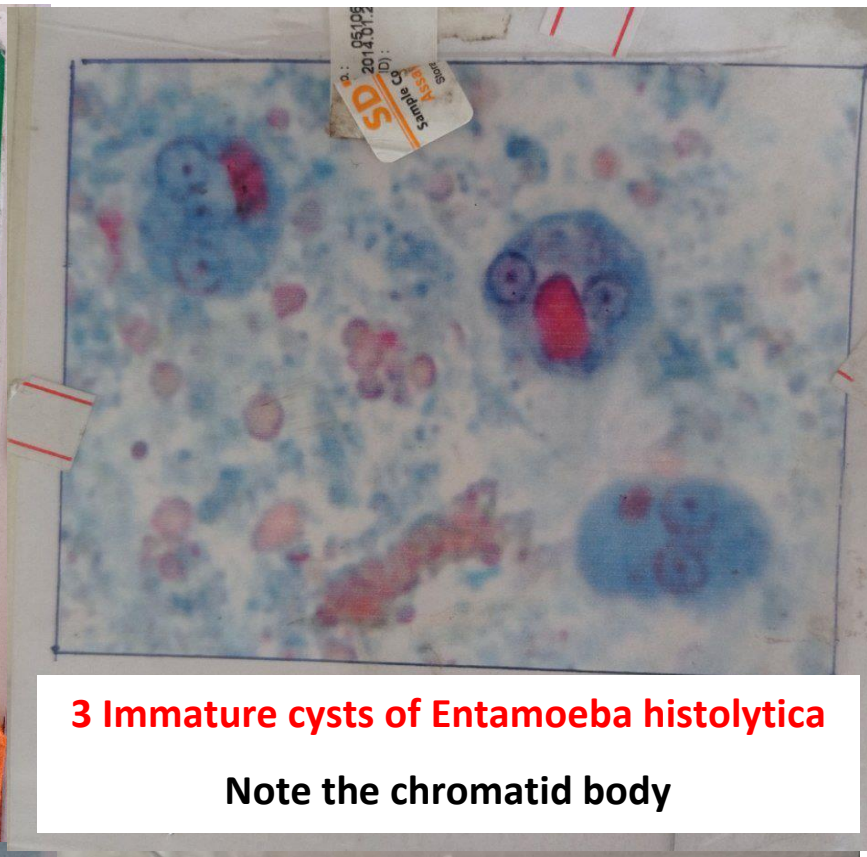


Cysts of Entamoeba coli



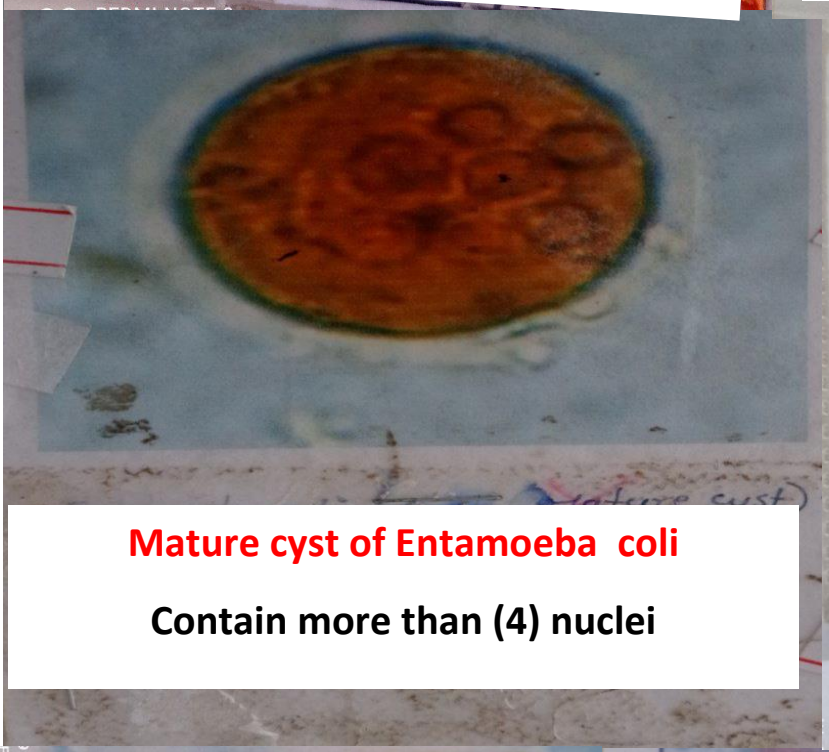
Mature cyst of

Entamoeba histolytica



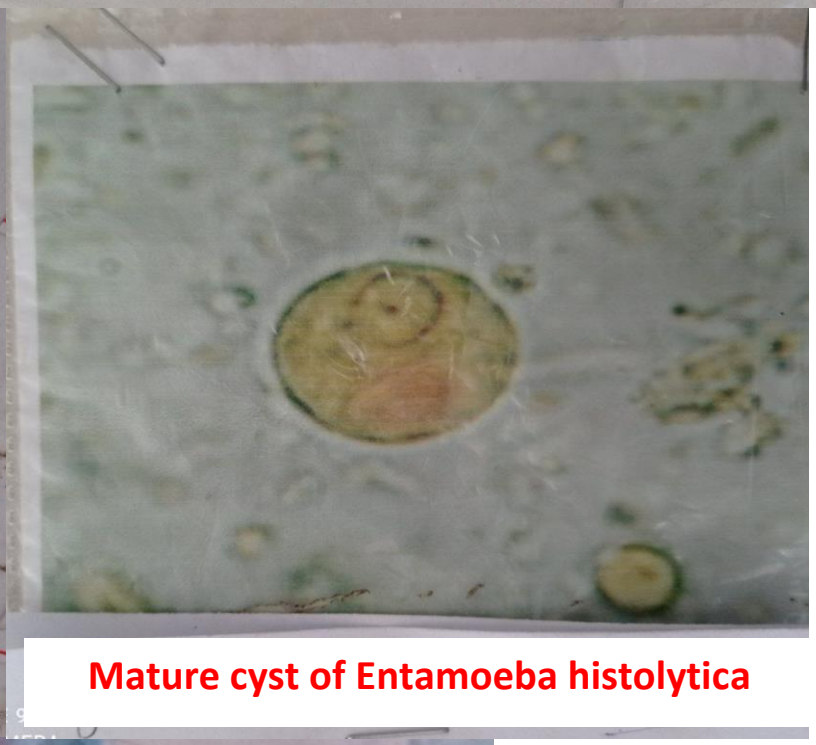
3 Immature cysts of Entamoeba histolytica

Note the chromatid body

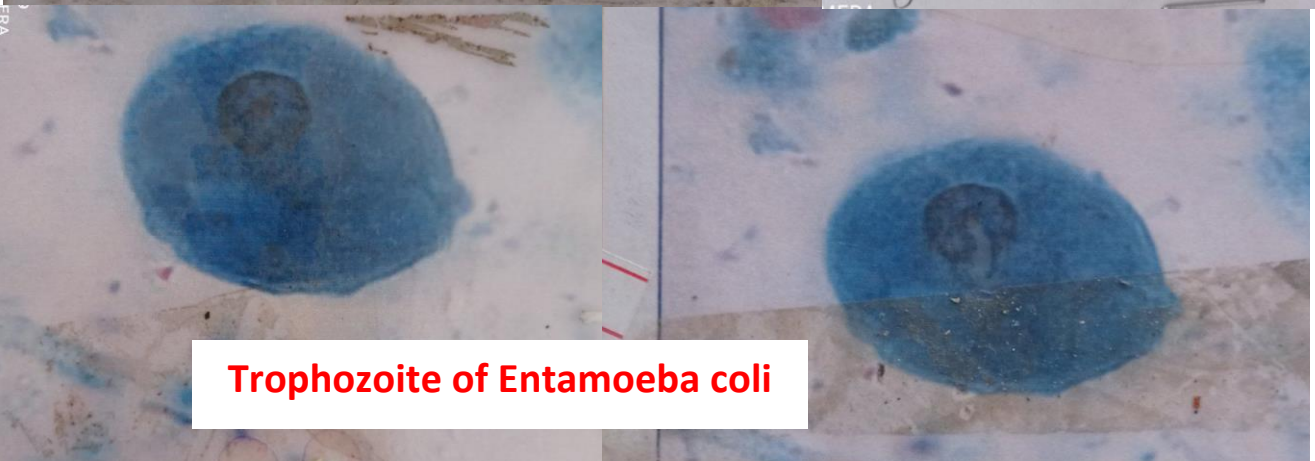


Mature cyst of Entamoeba coli

Contain more than (4) nuclei

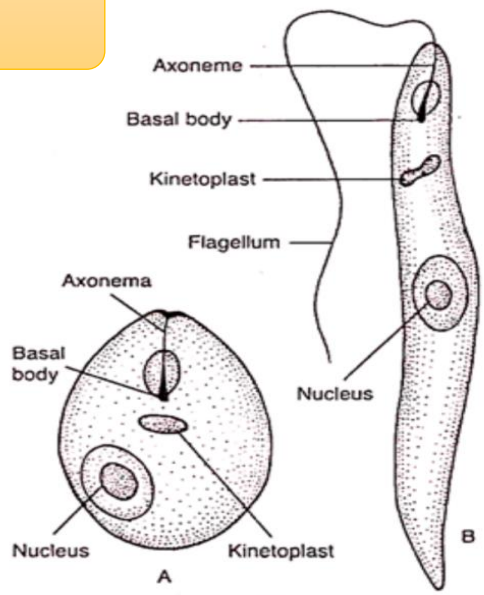


Mature cyst of Entamoeba histolytica



Trophozoite of Entamoeba coli

Leishmania



INTRODUCTION :

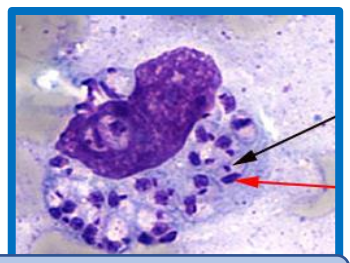
- Disease: Leishmaniasis
  - Visceral Leishmaniasis (VL),also called Kala-azar
  - Cutaneous Leishmaniasis (CL)
  - Mucocutaneous Leishmaniasis (MCL)
- Vector: Sand fly
- Infective stage: Promastigote

(found in the infected sand fly or in NNN culture)

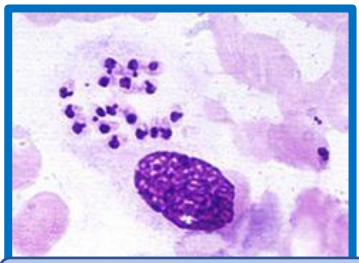
- Diagnosic stage: Amastigotes (in man & animal reservoir host)

inside macrophage(RECs) intracellular

outside macrophage extracellular

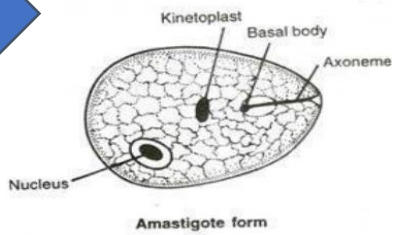


Intracellular Amastigotes



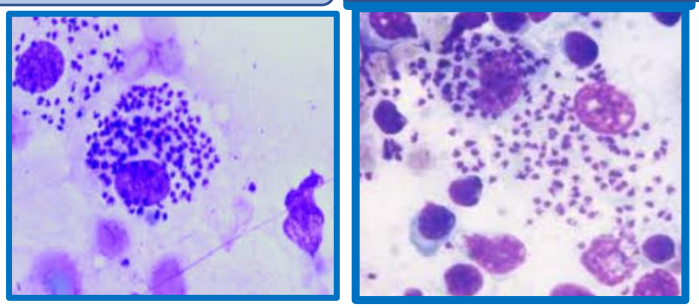
exrtacellular Amastigotes

Morphology :



a)-Amastigotes:

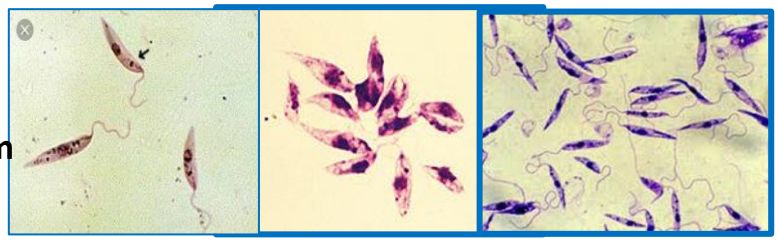
- Oval, intracelluar
- Small in size 2-3 M
- Contain nucleus and kinetoplast (parabasal body, blepharoplast) from which arises axoneme.



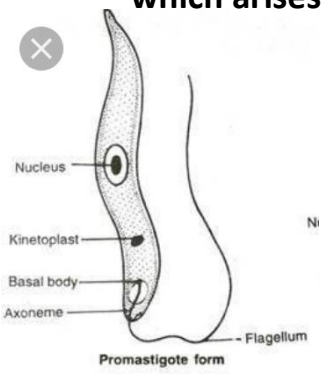
Amastigotes of leishmania species

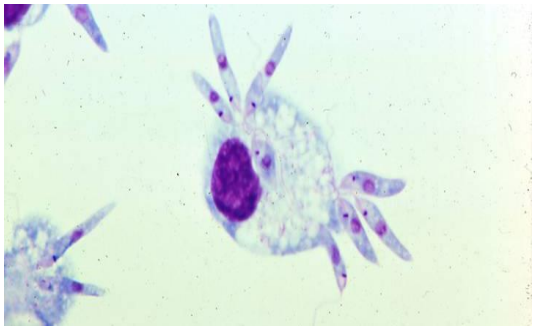
b)-Promastigot:

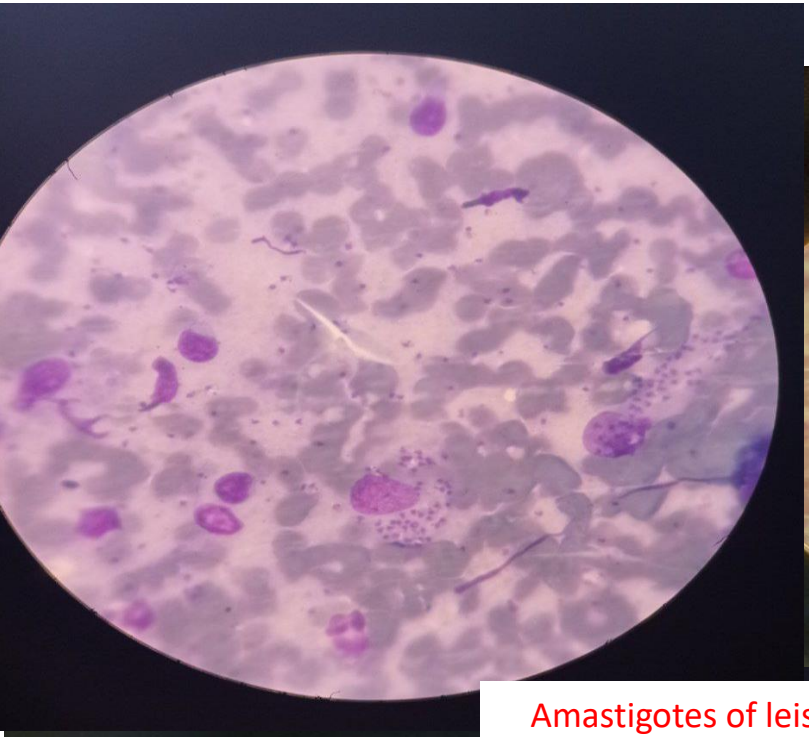
- Spindle-shaped
- 10-15 M in size
- The kinetoplast at the anterior end from which arises a free flagellum.

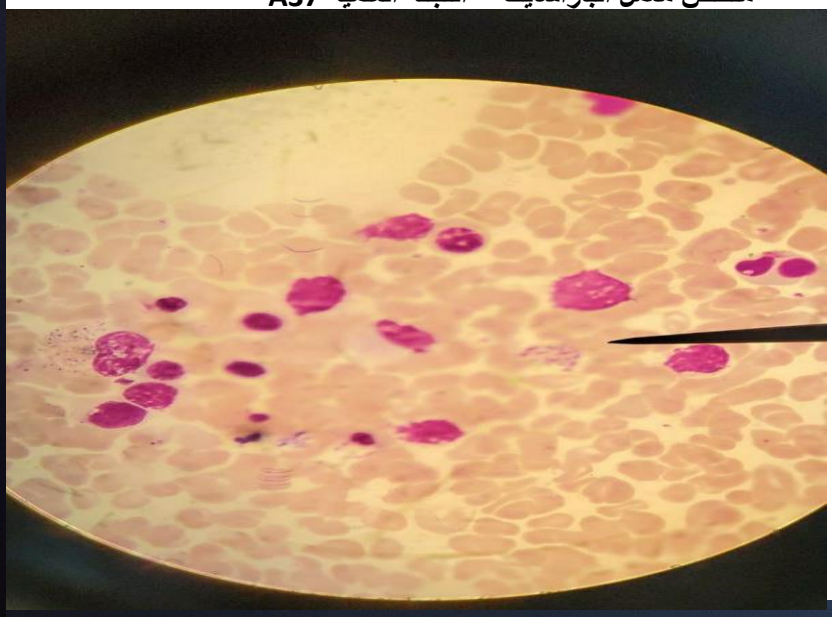


Promastigotes of leishmania species

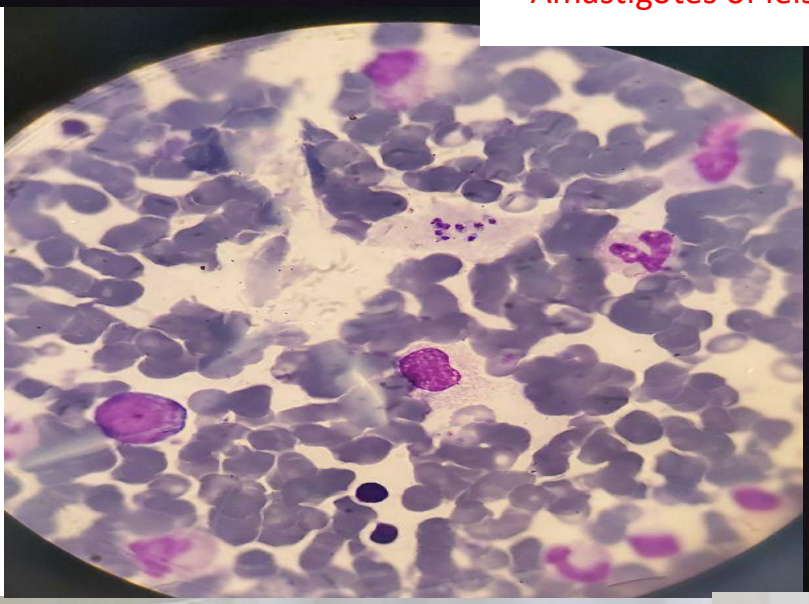


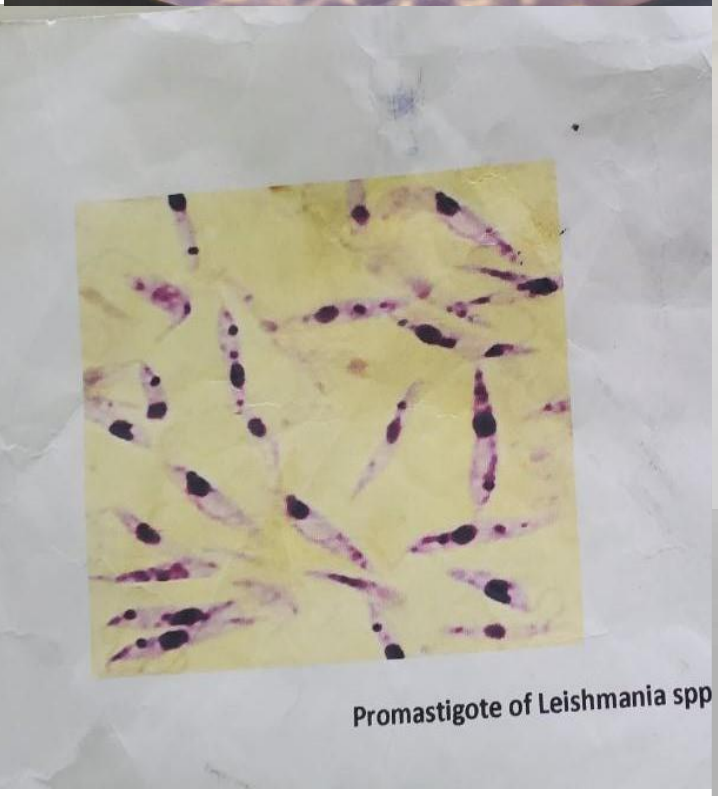


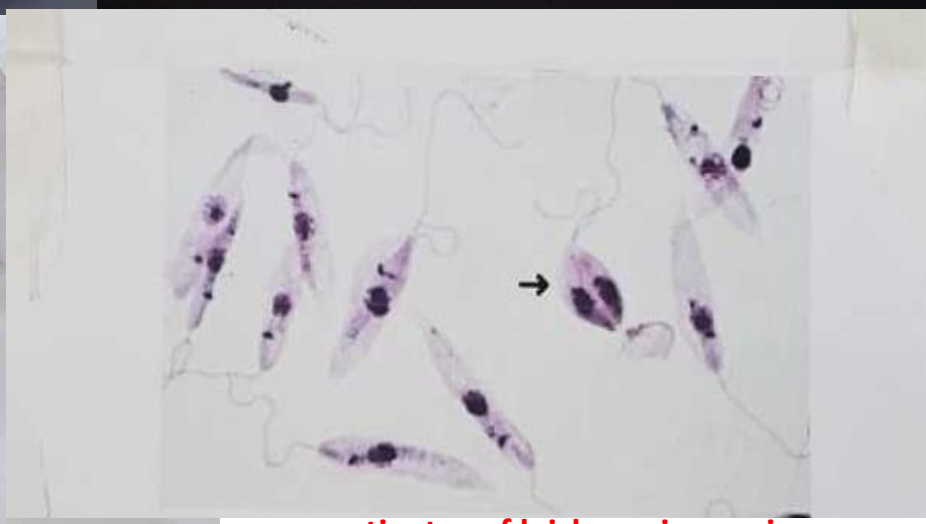




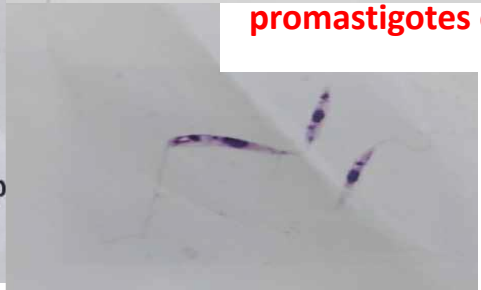
Amastigotes of leishmania species







promastigotes of leishmania species



Trypanosoma species
Blood flagellates

African trypanosome

T.brucei gambiense

Vector: Tsetse fly(Glossina palpalis)
Diagnostic stage: Trypanosomes (Trypomastigotes) in blood
Infective stage: metacyclic trypomastigotes

T.brucei rhodesiense

Vector: Tsetse fly(Glossina morsitas)
Diagnostic stage: Trypanosomes (Trypomastigotes) in blood
Infective stage: metacyclic trypomastigotes

✓ **Mode of infection:** by bite of an infected tsetse fly

Morphology :

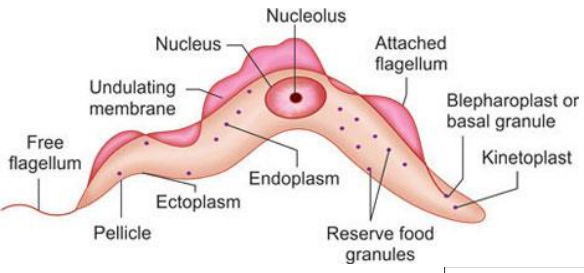
- ❑ **In blood , Trypomastigotes are pleomorphic and vary in length from 15 M to 30 M:**

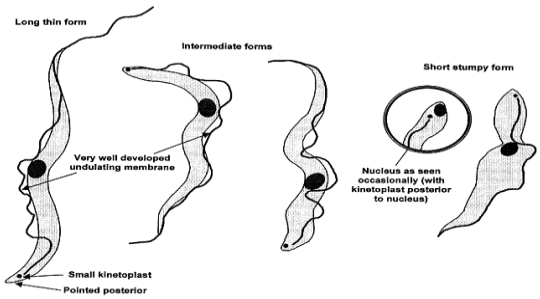
1- long slender form with a free flagellum(30 M in length)
2- Stumpy form without a free flagellum(15 M in length)
3- Intermediate form (22 M in length)

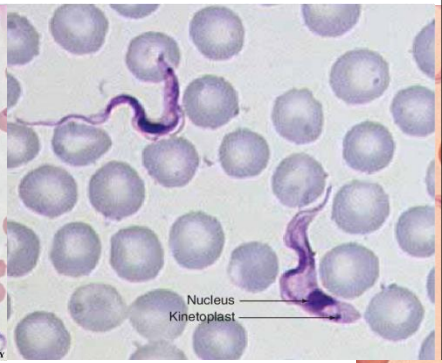
Trypomastigote:

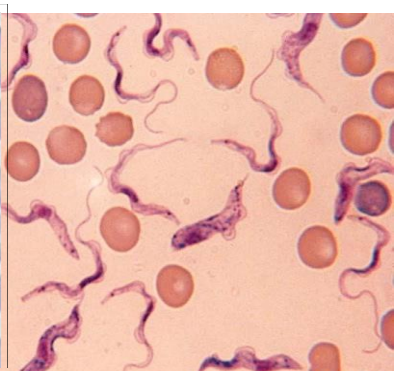
- **Spindle-shaped,10-30 M**

The kinetoplast at the posterior end from which arise a flagellum that form undulating membrane and project anteriorly as a free flagellum









American trypanosome

- ➢ *Trypanosoma cruzi*

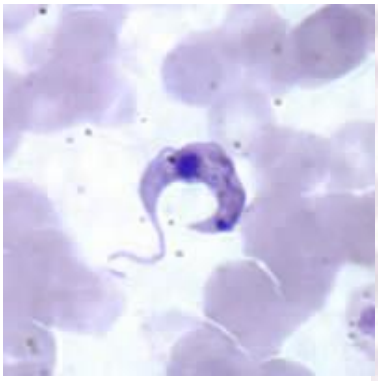
Vector: Reduviid bugs (Triatoma megista)
Infective stage: metacyclic trypomastigotes
Diagnostic stage: Trypanosomes (Trypomastigotes) in blood

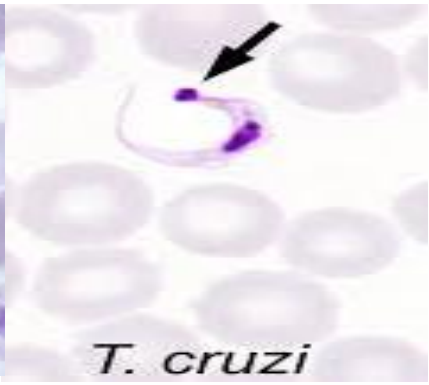
✓ **Mode of infection:** contamination of wound or abrasion with infected faeces of bug

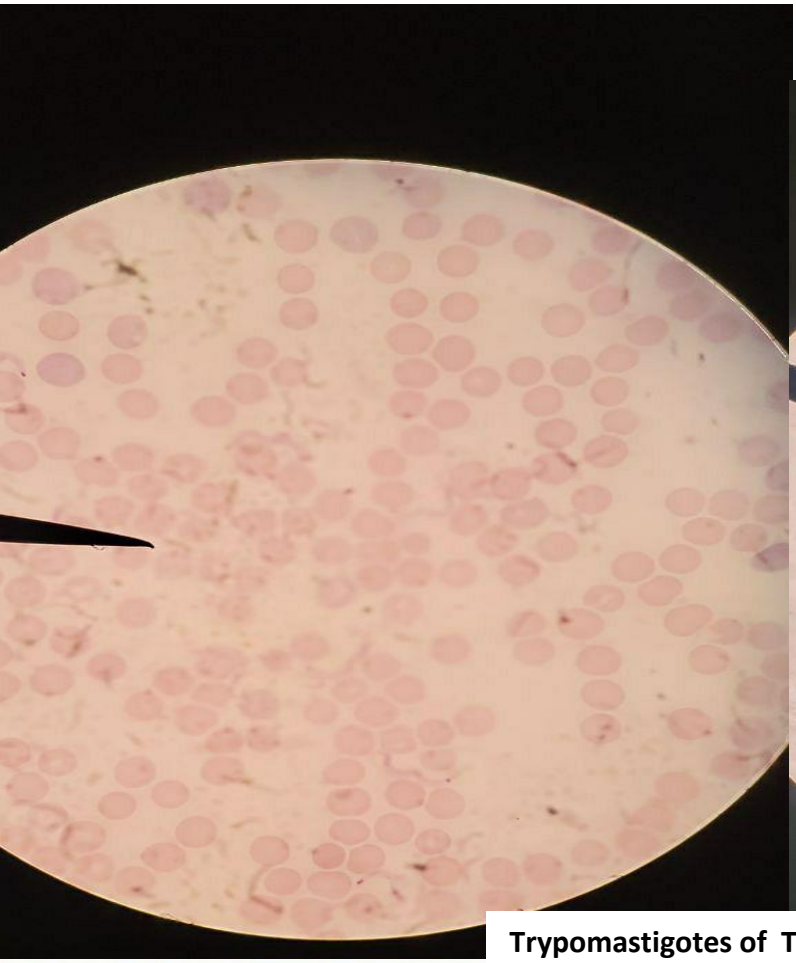
Morphology :

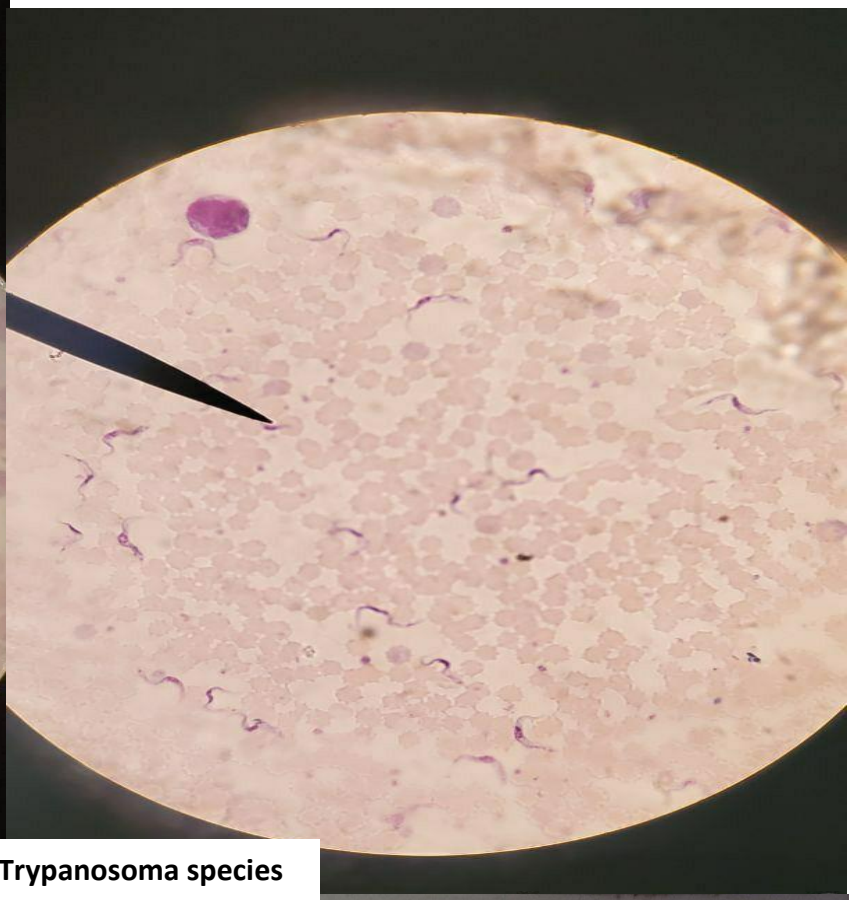
- ❑ **In blood , Trypomastigotes are monomorphic**
- ❑ **20 M in length .**

In stained film it usually takes C or U shape









Trypomastigotes of Trypanosoma species